Wisconsin Highway Research Program
Request for Proposal for

Performance and Design of Bridge Approach Panels in Wisconsin

Questions regarding the content of this RFP are due no later than
4:30 PM (CST), Monday, December 10, 2012

Responses to questions will be posted to the WisDOT Research and Library website (http://wisdotresearch.wi.gov/rfps-and-proposals) by
4:30 PM (CST), Monday, December 17, 2012

Proposers must submit an electronic version of a proposal (Adobe PDF required) by
4:30 PM (CST), Friday, January 25, 2013
to apakes@sustainability.wisc.edu

For further information regarding this RFP contact:
Angela Pakes Ahlman
email: apakes@sustainability.wisc.edu

Researcher Questions on RFP

Please refer all questions on this RFP to the WHRP Technical Director, Angela Pakes Ahlman by the aforementioned due date. Questions must be in writing. No response will be provided to questions received after the due date.

Researcher Proposal Preparation Guidelines

WHRP Proposal Guidelines are available on the WisDOT Research and Library website (http://wisdotresearch.wi.gov/wp-content/uploads/WHRP-RFP-Guidelines-11-26-12.pdf). Please refer to these instructions in preparation of your response.

Wisconsin Highway Research Program
Request for Proposals
Rigid Pavement and Structures Technical Oversight Committees

Title

Performance and Design of Bridge Approach Panels in Wisconsin

I. Background and Problem Statement

Several years ago, the Wisconsin DOT changed the bridge approach slab design from a system with 1 expansion joint to a system that now has 3 expansion joints (SDD 13B2). The reason for this change was to protect both the pavement and the bridge from differential expansion and contractions of both the pavement and the structure itself. Constructability of this design is proving to be difficult in the field. Since then, a new detail has emerged for use on Interstates and US Highways, with 1 expansion joint and a sleeper slab (Bridge Standards 12.10 and 12.11). These two different designs ask the question if 3 expansion joints are needed to provide stress relief, or if 1 joint is enough.

II. Objectives

The objective of this study is to find out the following:

- Review and analysis of current approach slab performance at bridges.
- Review and analysis of state of the practice approach slab design and performance from around the country.
- Determine if there are any precast approach slab members in use around the country that may be applicable to Wisconsin.
- Determine if there is a problem in the performance of approach slabs in Wisconsin, and if newer design methods will result in better performance.
- Determine if 3 expansion joints are needed to provide relief, or if the new design with one joint will work.
- Improve the constructability and performance of approach slabs.

III. Scope of Work

a) Tasks

Proposal: In the initial project proposal, the research team will be expected to define their draft experimental plan. The research team should also state as part of this experimental plan the details on how they plan to conduct the research, how much department involvement will be necessary, and what resources they plan to use to complete the project.

Task 1: The researcher shall review the current WisDOT approach slab design details, specifications and construction procedures. Items to be reviewed should include cost to build the structures, performance (both short term and long term), constructability and problems with currently existing systems. Field review of construction techniques and approach slab performance may be necessary as part of this task.

During this task, the researcher will also review approach slab designs and specifications from around the country. As part of this task, the researcher will review the performance, cost and constructability of different systems. Included in this will be investigation of the bridge backfill requirements, density specifications and related testing to verify the soils requirements.

Task 2: The researcher will present to the TOC and POC national designs and specifications related to approach slabs. Recommendations for improved approach slab designs and specifications should also be provided. Cost, constructability and performance should all be included. Part of the performance should also look at the effectiveness of the current 3 expansion joint design (13B2), in comparison to the newer single expansion joint detail (12.10 and 12.11). The final report will include analysis and summary of all test data. The final report should also recommend Standard Detail Design, Construction and Materials Manual and Standard Specification changes.

b) WisDOT/TOC Contribution
   i) Expected level of involvement by Staff/TOC Members:

      It is expected that the TOC will need to aid the research team in gathering some database information, such as information from the PIF files and as-builds.

   ii) WisDOT Equipment:

      Researchers should not assume availability of WisDOT equipment in the proposal. If equipment is donated to the project by WisDOT or another entity, a letter of commitment must be included in the proposal. It is not anticipated that any WisDOT equipment will be needed as part of this study.

c) Requirements for Laboratory/Technician Certifications

   None

d) Required travel to fulfill TOC Obligations:

   Some travel around Wisconsin may be necessary in order to verify field performance of some of the concrete approach panels and pavements. Travel to Madison to report the results of the study to the Rigid Pavement TOC in Task 2 is required.

IV. Specific Results, Findings, Tools, etc. (Deliverables)

a) Presentation Requirements. All projects require the PI to give a closeout presentation after submittal of the draft final report.
b) Final Report. Electronic copy in PDF format and eight hard copies delivered to WHRP by the contract end date.

V. Budget and Time Frame

a) Proposed Project Duration is 18 months. (starting August 1, 2013 and ending January 31, 2015)
   - Deadline for submittal of draft final report is October 31, 2014.

- Deadline for submittal of Final Report is January 31, 2015.

b) Project Budget shall not exceed **$80,000.**

VI. Implementation

a) This study will review performance of approach panels in the field, and see if there are any trends or issues.

b) Researcher is expected to communicate the following:
   i) Recommended potential changes in practice.
   ii) Benefits in terms of performance and cost savings.
   iii) Improvements in constructability.
   iv) Recommended Standard Detail Drawing, Specification and Construction and Materials Manual Changes.

c) Any tools necessary to facilitate implementation of this project.